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The Tool Engineer

Vol. IV. No. 3.
JULY
1935

ON-TO-CLEVELAND
WITH
A.S.T.E.

See pages 12-13

See Page 1

Official Publication of the

AMERICAN SOCIETY OF TOOL ENGINEERS

A GAP INTERNAL ... with 39" Swing

New...
SEE IT AT THE
CLEVELAND SHOW
SEPT. 11th to 21st

THE new Heald Gap Internal Grinding Machine with its heavy Tee shaped base, wide table with wide ways and low work center height, provides unusually rigid equipment for handling large diameter work such as gears, plates, rods and similar parts requiring a generous size swing.

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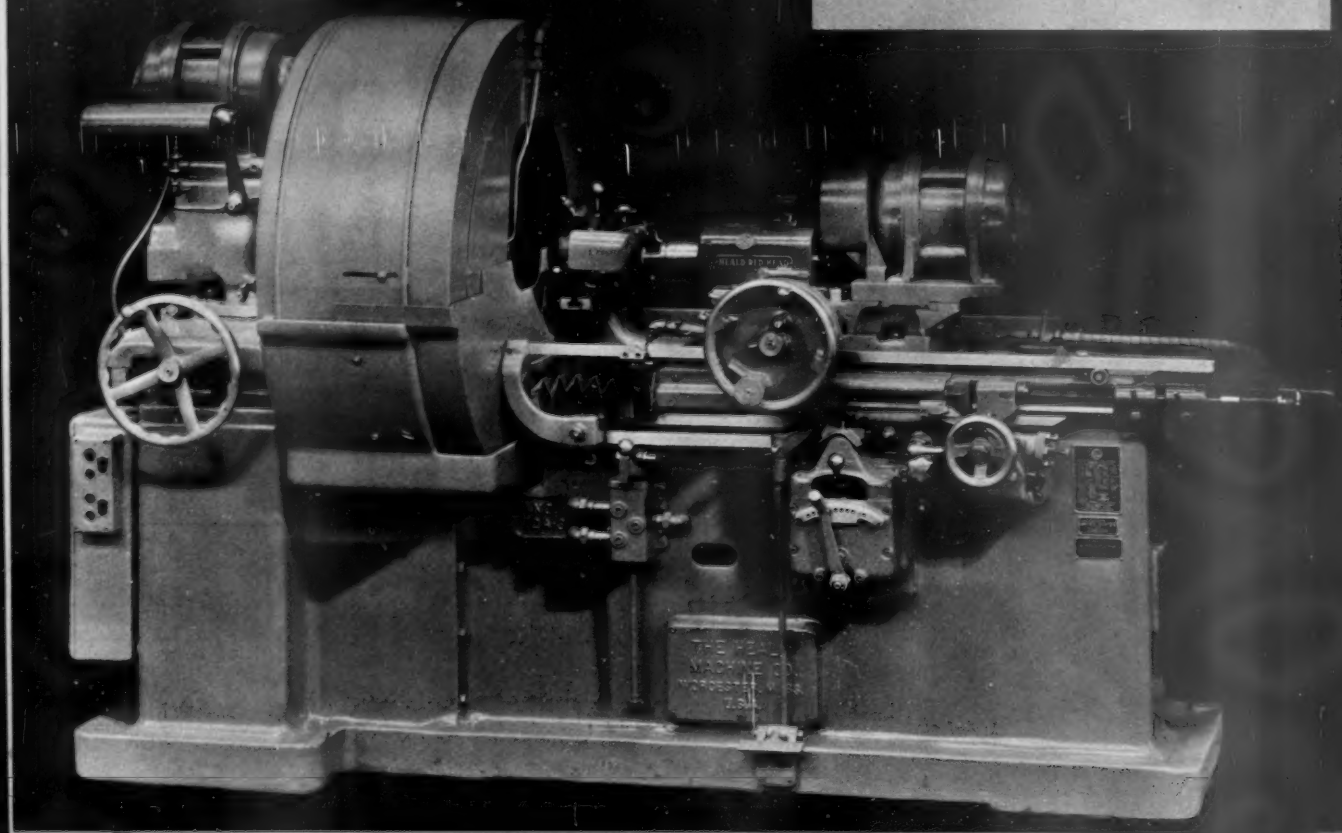

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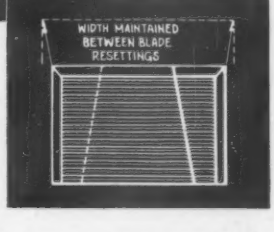

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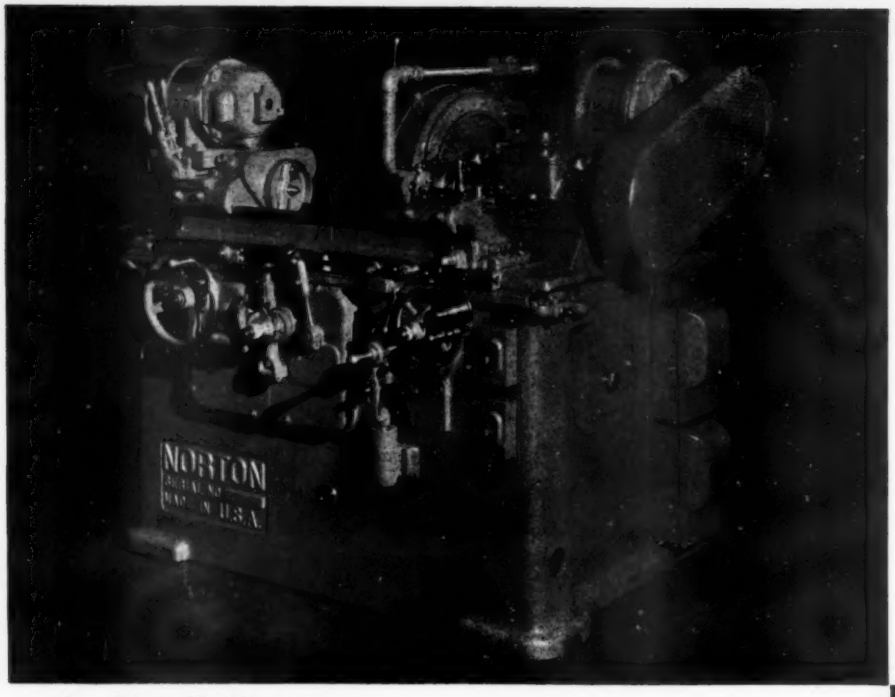

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The Tool Engineer

Official Publication of the AMERICAN SOCIETY OF TOOL ENGINEERS

Vol. IV JULY, 1935 No. 3

AMERICAN SOCIETY OF TOOL ENGINEERS

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Application blanks and information pertaining to membership in the American Society of Tool Engineers may be had by addressing *The Tool Engineer*, 2842 W. Grand Boulevard, Detroit, Michigan, or the Secretary's office, 31 Melbourne Ave. Detroit, Michigan. **Dues** are $5 initiation fee, $3 per year for senior grade membership and $2 per year for junior grade membership.

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Owing to the nature of the American Society of Tool Engineers organization, it cannot, nor can the publishers be responsible for statements appearing in this publication either as papers presented at its meetings or the discussion of such papers printed herein.

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Everybody's Going!

1935 MACHINE TOOL SHOW
CLEVELAND SEPT. 11-21

ARE *YOU* GOING?

A special edition of *The Tool Engineer* will feature the National Machine Tool Show. This will be an extraordinary number—watch for it—out August 20th. Interested advertisers are urged to get their advertisements in not later than July 20th to catch this important and widely read edition.

Meet us all at Booth A6—Opposite Sole Entrance to the Show.

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PRODUCTION PERSPECTIVES

These are very busy days for Tool Engineers, with no particular "summer slump" on the horizon, production holding up fairly well, and the getting ready earlier, this year, for new models in the automotive industry. A.S.T.E. is invited by the Machine Tool Builders to sponsor a technical Session at the Show in Cleveland and plans to attend en-masse—1,000 or more, on the world's largest inland steamer, the *Greater Detroit*. Many committeemen are busy on this—a big undertaking, but well worth the effort and time it takes for the benefit and enjoyment members and friends who go, will derive. **Are you going?**

The factory of the **Muncie Products** division of General Motors, idle three years, **opened recently** for the manufacture of automobile transmissions and other parts. Approximately **400 men,** nearly all Muncie and Delaware County men were **given employment.** It was stated, however, that **key men from other General Motors plants** are **in charge.** It is also understood that **Chevrolet parts** will become a part of **this plant's output.** $40,000 worth of machinery and equipment of the **Marmon Company** in Indianapolis was ordered sold, following a conference with the receiver and Judge Joseph T. Markey of Superior Court. Real estate of the Marmon Company, valued at $460,000 will be held for more favorable conditions—in the meantime factory buildings are being leased for a period of two to three years.

"Yoloy" is a new nickel-copper alloy steel, just announced by the Youngstown Sheet and Tube Company. The new material is said to have exceptional resistance to corrosion and a high tensile strength with high ductility, workability and weldability. It will be produced in sheets, strips, plates, bars, shapes wire and seamless tubes. **Otto Lundell,** A.S.T.E. member, we hear, is sailing for Europe and expects to be gone the best part of the summer. Mr. Lundell, President of Michigan Tool Company and the Colonial Broach Company will visit England, France, Germany and Sweden on his sojourn.

F. H. Webster, Jr. is new director of purchases for the **White Motor Company,** Cleveland. He succeeds **Bert Graves** who has been promoted to the staff of M. R. Kavanagh, Production Manager. Mr. Webster was formerly with Columbia Axle Company—in the capacity of director of purchases for eighteen years. **Bill Hart,** A.S.T.E. member and chief engineer of the Colonial Broach Company in Detroit, recently made a trip to Holland, (Michigan). Reportedly it has been said he now wears wooden shoes—especially at his summer home on Bald Mountain.

A. S. T. E.
GOLF TOURNAMENT

Redford Golf Club

Seven Mile Road near Grand River

Saturday, July 13th, 1935

●

Members and their friends are invited. On this occasion a kickers' handicap will be provided—with prizes to be awarded. All day golf privileges.

Tee off between 8-9 a. m. from No. 1 and No. 10 tees. Keep your party together. Members are urged to make up their own foursomes and notify the Secretary's Office, Mad 2057, not later than July 10. Late arrivals will be grouped into foursomes at the club, as they arrive.
Get tickets from the committee or officers.

Price $1.50

Includes all day golf and a special luncheon, to be served in the club house.

Bill Fors, A.S.T.E. member and a former Tool Engineer with Cadillac Motor Car Company has joined with L. G. Jones in acquiring the D. O. Goudie Sales Company. Both men are well known in the automotive industry, Mr. Jones being for many years with the J. T. Wing Company.

George Binns of Cincinnati knows his golf—ask A.S.T.Eer **Hayward Gay.** Speaking of golf—have you noticed the big A.S.T.E. event scheduled for July?

T. B. (Bert) Carpenter, Past President of A.S.T.E. and until July 1st connected with General Motors Truck Company in Pontiac, Michigan, as a tool supervisor has joined the Pioneer Engineering and Manufacturing Company. He will be with the latter company in the capacity of an executive engineer on special assignments.

Among new members voted in at the last A.S.T.E.

Board of Directors' Meeting are **William Fahey** of the Rivet Machine Company, **Chicago,** Illinois. **Eugene Haas** of Detroit, connected with Cincinnati Milling Machine and Cincinnati Grinders. **Thos. C. Sterling,** of the New Britain Gridley Machine Co., **New Britain,** Conn., **Leo R. Matthews** of the Burroughs Adding Machine Company in Detroit. Several new members from the Detroit plant of Lincoln Motor Car Company were admitted. They are **E. M. Hovey, Karl F. Marx, Sylvester Tyrone, Frank G. Gies** and **Kennerdell W. Clarke.** Others fro mDetroit were **Fred Hausler, Wm. M. Ziegler** and **John Bailey. E. J. Wendell** of the Hale Fire Pump, **Conshohacen,** Pennsylvania, **Alexander H. d'Arcambal** of **Hartford,** Connecticut, **George E. Demorest** of Buick Motors, Flint, **R. M. Gaston** of the Mall Tool Company in Chicago and **K. G.** O'Leary of the National Superior Company, **Toledo. R. L. Ingram** of the Goddard & Goddard Company in Detroit was also made a member at this meeting. All A.S.T.Eers welcome these new members and all urge them to avail themselves of all the good things that go with A.S.T.E. membership. Active participation of these new members in the various social functions and activities of The Society will do much to continue the pleasant and enduring friendships and associations which are such an integral part of A.S.T.E.

A. M. Sargent, **Secretary of The Society reports** a **marked shortage** of body die designers—"There have been many more calls than we could fill," states Al. Any members who are interested in this type of work should get in touch with the Secretary's office, MAdison 2057 or come in to his office and make out a record.

Down in **Dayton** we see **Apex Machine & Tool has bought out the old Schellenbach-Hunt Tool Company.** The latter company will be moved from Cincinnati up to the Dayton plant of Apex—many of the old employees, some with the S & H Company for many years, are also being transferred to Dayton. From **South Bend** we hear that **Bantam Ball Bearing** has added a **new building** to their plant—providing about 60% more floor space for the company. The first five months of this year, it is said, showed a **60% gain in shipments** over the similar period of a year ago. **H. R. Wentzell** for eighteen years with Studebaker Corp., resigned recently to join the Adams Engineering Die & Tool Company of South Bend. Mr. Wentzell joined Studebaker in their Detroit plant as a tool designer in 1917, but has spent the greater part of his time with Studebaker at South Bend.

Clessie L. Cummins, President of Cummins Engine Company, Columbus, Indiana recently completed the first lap of a transcontinental trip in a stock Auburn chassis equipped with an **oil burning Diesel** engine of his company's manufacture. The trip from New York to Columbus, Indiana was made at a fuel **cost of $1.79** and the entire trip from New York to Los Angeles to be completed in 10 days will be made at an anticipated fuel cost of not more than eight dollars. "I'm not out after speed records," said Mr. Cummins, but, rather, to prove how cheaply a Diesel-powered car can be operated under average conditions.

A.S.T.E. Speakers' Club Ends Successful Season

By DAVE FORSMAN

A.S.T.E. members who have been attending the Speakers' Club meetings on Tuesday Evenings since last fall, all agree that the course has been most successful. Training in public speaking and practice in thinking while on ones feet were features of the course. The efficient tutoring of Harry Heffner is plainly evident in the manner and delivery of many of the members who received his excellent coaching.

The season was started at Bob Lippard's office with Mr. William Smila as President of the group and Frank Gertiser as Secretary-Treasurer. It was soon decided to have a different chairman for each meeting, so that each member of the class would have practice in conducting a meeting. The subject for each members discourse was usually chosen by the member individually, although at times, entirely extemporaneous talks were given.

The class, this year had about twenty registered members and a much larger class is expected next year. Due notice will be given next fall so as to give all who are interested an ample opportunity to make their arrangements. Among those who attended the past year and some of the subjects they discussed are: Bill Smila—Old Age Pensions, Lee Diamond—Traffic Problems, Bill Fors—Sailing, Herb Wilbraham—Tobacco Raising in the Connecticut Valley, Bob Lippard—Travels he has taken, Gene Haas and Ben Welte—Germany, Ford Lamb—The Farm as a Refuge for the Sales Engineer, Bill Hart — Experiences in Flying, Charlie Staples—Patents, and Al. Sargent and Hayward Gay on a diversity of subjects, showing they had had experience before, and Mr. Saunders proving he was no novice and Walter Kasturski attending as often as he could, but missing quite a few meetings.

Ed. Harper's talk on continuous machining operations held much interest, as did Frank Gertiser's talk on D.S.R. problems.*

A.S.T.Eers who did not attend these meetings missed a good time as well as some good training and the good fellowship of the men who are trying to improve themselves and their abilities. Watch for the announcement of next year's class.

**Editor's Note:—Mr. Dave Forsman, who is the author of this report on the activities of the A.S.T.E. Speakers' Club, has failed to mention the humorous and interesting talks given by himself—for instance his talk on "Fads" which was given one evening when your editor attended one of the interesting meetings of this worthwhile group.*

NATCO MOVES ENGINEERING TO DETROIT

The National Automatic Tool Company of Richmond, Indiana has recently moved their tool and fixture engineering department to Detroit. The new office will be located at 1428 Lafayette Boulevard, under the supervision of Mr. Walters who has long been connected with the Natco organization. The Detroit sales office will continue to be located in the New Center Building.

VOCATIONAL ORGANIZATION

"UNIONISM" IS BELOW THE VOCATIONAL ● STANDARDS OF THE ENGINEERING WORKER ●

IN CONCUDING this series, I reiterate the opinion that unionism, as it concerns itself with industry, is not a pattern from which draftsmen and engineering workers can mold organization with benefit to themselves. Nor, for that matter, am I at all convinced that its leaders and organizers have served the best interests of labor as a whole. With a few notable exceptions, these have shown themselves both weak and shortsighted in so many instances that benefits avouched have been offset by blunders which, to all practical purposes, may as well have been direct betrayal of workers' interests. Unionism, which accuses its opponents of being reactionary, has been a brake on the wheels of recovery; a force of obstruction, as far as industry is concerned.

I do not impugn unionism without reasons, which will be briefly summarized. For one thing, it has made a determined effort to gain control of the designing vocations, a field which common sense dictates should be an arena of free competition. Because of that, I consider myself justified in discrediting the union organizer who, in my opinion, is frankly out of his element in the drawing room, nor as altruistic in his championship of workers' rights as he would have us believe. Nor is unionism the answer to our economic problems. It has failed, among other things, to intelligently consider the most vital problem of all—employment. True, there has been a lot of wind, but that of itself is idle unless harnessed. In 1930 President Green of the A.F.L. made the rather fatuous statement that " . . . the only cure for unemployment is jobs." What remarkable perspicuity! Yet, when the N.R.A. issued its challenge, and industry started to provide jobs *even before it had a tangible market,* the first thought of union leaders seems to have been concerned with putting as many men as possible out on the street. Of course, there was the plausible excuse that the period of absorption provided a golden opportunity to force wage increases by strike and what have you. Conceding that unskilled labor has benefited, the skilled crafts and vocations have gained little of note. On the contrary, the status of highly skilled craftsmen is now little better than that of unskilled labor. With such levelling of wages, workers in the skilled crafts will suffer until management works out a scheme for distribution of wages commensurate with superior training. I say *management,* since the unions have shown themselves inadequate in the higher brackets.

by **A. E. RYLANDER**
Member A.S.T.E.

CAPITAL AND UNIONS

It may be noted, in this connection, that I have quite disregarded capital in these articles. There is no such animal, as far as industrial relations are concerned. The term has been an effigy reared by labor agitators to make the workers class conscious. There are only two factors in industry: management and labor. Capital, in its literal sense, is but a tool of both, paid for in interest rates as one would pay rental on a tool one did not directly own. The sooner the worker relegates the *Capital complex* to the limbo of forgotten things the sooner he will start going places. True, there is such a thing as capital, (to call it that) in the sense that wealth is concentrated in the hands of a few, but this parasite class is not to be confused with industrialists who have *created wealth* and who use profits for industrial expansion and increased employment. But ye gods! Why prate of capital when, before the depression, American labor contributed some $60,000,000 annually to the support of unions whose leaders drew salaries ranging up to $20,000 a year, with expenses. Capital! The pot calls the kettle black.

Reduced to essentials, unionism means that the majority is ruled by a minority clique which. once it has gained a strangle hold on a vocation, exploits it to its own ends. And, like the old man who fastened himself to Sinbad the Sailor's back, it is not to be easily shaken off. Nor, in spite of all the ballyhoo about spreading employment, have the unions shown any great concern for the unemployed outside of their own ranks. Rather, the general tendency is to restrict employment, as, for instance, to limit apprentices and beginners in any given craft. What, then, is to become of the outsiders? What of our children? Frankly, the problems now confronting the nation are too vital—too general—to be settled by any majority group for its own benefit. Employment should be a matter of a job being open for the man—*and woman*—who want to work, not a privilege for the holder of a union card.

THE COMPANY UNION

In this connection, there is one phase of industrial relations to be broached—the company union. Regardless that this is anathema to the union organizer, it has much to recommend it. This, of course, is a matter of opinion; however, I have made no bones about my personal opinions in previous writings, and do not propose to equivocate

now. In this the reader must consider two facts: one, that leaders of organized labor oppose the company union because it is a direct threat to their offices. They do not propose to give up the life of Riley without a struggle. The other fact is that, with the company union, the employees' representatives can meet management (or its representatives) on a man to man basis, with common appreciation of mutual problems. Adjustment or compromise can then be effected without the undercurrent of hostility that so often frustrates negotiations between management and, say, a "business agent" who may be but a puppet in the hands of a "big shot." With the breakdown of NIRA, which led labor to the edge of the precipice (and *promised* it the world) and with the repudiation of the A.F.L. by one after another conservative labor organizations, it is possible that readjustment will effect a *cooperation* between management and labor sadly lacking in the brief heyday of the Blue Eagle.

In a broad sense, the "company union" would be a factor in stabilizing employment, something that organized labor has not succeeded in doing, since its very being is begotten of agitation and unrest. Everything considered, the biggest problem confronting America today—the world, for that matter—is the absorption of the idle into paying jobs. It is of equal importance to keep workers employed. A close organization, as a shop union (to use the popular (?) term) can best work out such problems in its own field, with such sacrifice of immediate petty gains as will insure the best ultimate results. Naturally, the union organizer will attack this suggestion (it is but that). However, I am quite sure that organized labor cannot produce a leader who of himself has ever evolved a major invention from conception to mass production and mass employment. Until it can produce such a man it is not in a position to logically challenge the policies of management. Only the man who has directly shared in the rearing of an industry is qualified to sit at the round table with management. Of course, there are bad features about shop unions. If they become prevalent, the union organizer may have to go to work. He may not like that.

THE PROGRESSIVE ORGANIZATION

So far, I have frankly generalized; incidentally, review of the series may seem indicative of a bias in favor of management. Say, rather, a bias in favor of common sense. I have simply presented facts, without having overly bothered with apology or qualifying explanation. Limitations of space have prohibited both. The foregoing has been a sketchy outline of a situation which directly concerns the man in the engineering office. I have not attacked organization, but abuses. We will now consider a tentative outline for an organization of draftsmen, of rank below major executive positions.

Such an organization, if it is to serve the best interests of men in the designing vocations, must first declare utter independence of any union influence, *or any affiliation below its vocational standard*. Whether a detailer, a designer or a trained engineer, there is but one road open to the draftsman if he is to *progress* in his chosen vocation. Who but the retrogressionist wants to backtrack? The logical conclusion, then, is to so project its policies that the organization can command the respect and win the cooperation of recognized engineering societies—*the moral support of organizations with common interests*. Also, organized draftsmen must once and for all rid themselves of the complex that all men are created equal. That idea is sentimental bunk, however plausible it may sound when some glib orator expounds it to a salvo of applause. We are neither conceived nor born in parity, nor equally endowed with innate talents. Nor do we all have equal opportunity, or rather, equal luck, since that is a factor. The sensible thing is to concede disparity at the start, and to enhance vocational standards by setting an unlimited goal. Let the sky be the limit as far as individual ability is concerned. Forget, too, such piddling issues as the 30 hour week (which will take care of itself) and shoot for bigger objectives; *objectives which can only be attained through education*. Instead of a mutual sob society to bewail conditions, educate and inspire the membership to rise above them. Learn to do a good job better. As a collective body, work out methods which will make the designer indispensible, not an expense man. To say: "We want a 30 hour week." or "We want $300 a month," is only a pain in the neck to the management, which, if (?) it acceded, would be in the tough spot of reconciling increased costs with competitive selling price. But, show the "boss" a method whereby two mousetraps can be produced at the cost of one, and he will either listen to a sales talk—or a competitor will. The illustration, of course, is exaggerated. But then, even caricature exaggerates basic truths.

There are big projects ahead. The men who will share in them are men who can think in big terms, who, during the period of readjustment, prepare themselves, by education and progressive associations, to be positive factors in progress. Such men do not join an organization because they are licked, *but because they want to help an organization to lick conditions*. Defeatism is a poor foundation for a vocational organization that wants to go places. At this time, there is need for an organization of engineering workers which, collectively, can grasp the bigger issues and work *with* management toward the solution of major problems; toward an enduring prosperity. In fact, such an organization may be necessary to protect the engineering worker from exploitation. For, as I have previously pointed out, a minority clique can easily jeopardize a vocation.

THE A.S.T.E.

"But," the reader may protest, we have such an organization. What of the American Society of Tool Engineers?" Yes, there is the A.S.T.E., which has won recognition for and given dignity to a heretofore all but unknown quantity—*The Tool Engineer*. Incidentally, it has won merited recognition from leading engineering societies, and has given a status to its membership which immediately stamps it with the approved label of progressive conservatism. It will go places because it first sighted at a

(Continued on page 14)

BORING BAR CUTTERS

by **Chas. F. Staples**
Member A.S.T.E.

BORING BAR cutters and cutter heads require careful consideration and analysis before leaving the drawing board or before being specified by the tool engineer. A large variety of cutters is being offered to the trade by companies making a specialty of boring bars, and in most cases it is better economy to adopt a known standard cutter that can be purchased from stock than to go to the expense and take the time to design a special cutter.

A great variety of cutting materials are being offered today and the cutting end of the tool generally receives first consideration, and due to the popularity and progress made by tungsten carbide, this little article will be on cutters tipped with this material.

The superior cutting qualities of tungsten carbide are due to its homogeneous structure, and enormous compressive strength. It is not flexible, and therefore cannot be handled as easily as high speed steel. It is important that this be understood and considered before new tools are designed or standard tools purchased.

Reference to the illustration, Fig. 1 shows a solid cutter body "A," tipped with tungsten carbide "B". It will be noted that the top face of the tungsten carbide tip is mounted radial to the center in order to obtain the same cutting condition as when a turning tool is placed on center.

Fig. 2 illustrates a single point tool in which the body "A" is mounted off-center in order to bring the tungsten carbide tip "B" radial to the center. And "C" is a slot for chip clearance.

In Fig 3 is shown a two-piece adjustable cutter; and as this article pertains only to the mounting of the cutting tool in relation to the work, no means of adjustment is shown.

This cutter body consists of two parts "A", and tips "B". It will be noted that the chip clearance "C" extends well beyond each end of this cutter as it is very important to have sufficient chip clearance.

Fig. 4 illustrates a cutter for large work in which a filler block "A" supports two cutter bodies "B."

A tool of this type was placed in operation boring cylinders. The average run per grind was 15,000 to 20,000 cylinders. This cutter replaced a cutter having its cutting edge above center. The average run of the cutter replaced being 900 cylinders per grind. This illustrates the importance of placing the tungsten carbide tip with relation to the work.

Previous tools illustrated have been for one operation such as roughing or finishing. Fig. 5 shows a cutter head for both operations, i.e., roughing and finishing at the same time providing the bar is mounted in such a way as to eliminate any vibration or back-lash. A mounting of this type was illustrated in Fig. 6 page 11 of the January, 1934 edition of this publication. In this cutter two roughing tools "B" and two finishing tools "C" are mounted on a common filler "A."

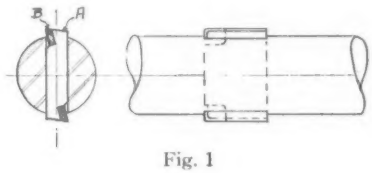


Fig. 1

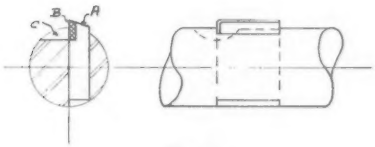


Fig. 2

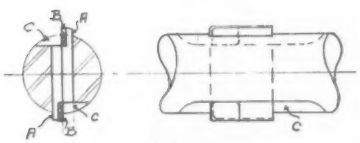


Fig. 3

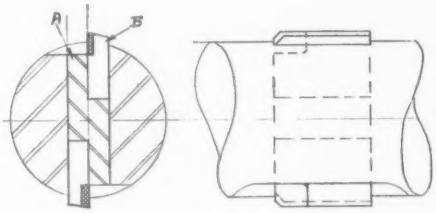


Fig. 4

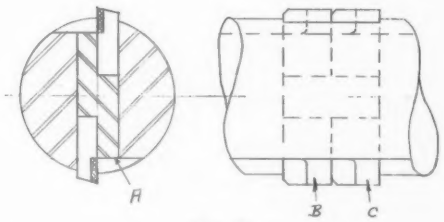
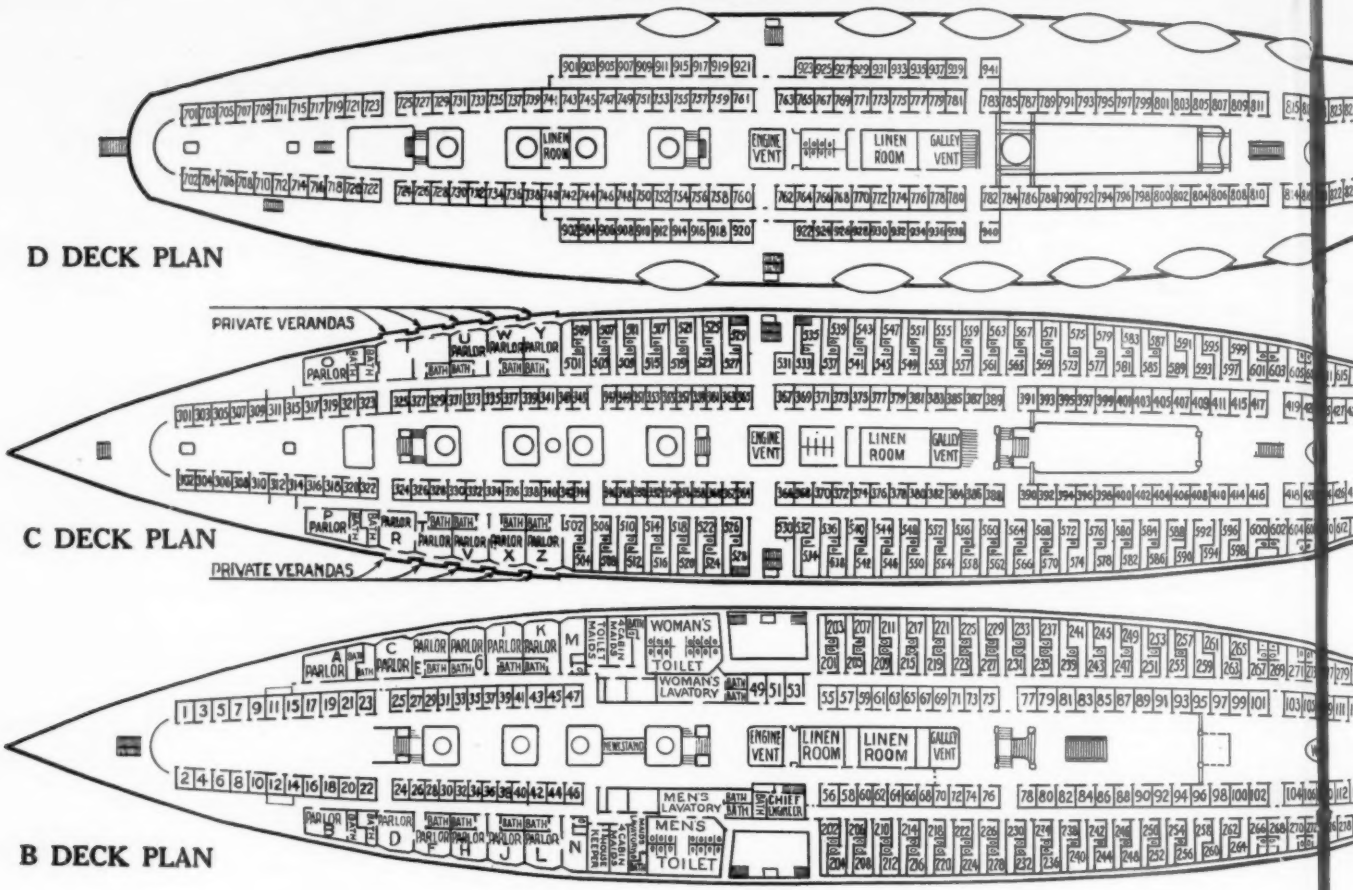


Fig. 5

STEAMER GREATER DETROIT



AVAILABLE $10 ACCOMMODATIONS

Base Price $10.00 includes transportation on the steamer to and from Cleveland breakfast on board Friday morning, Sept. 13th, entrance and registration to the Machine Tool Show, Banquet and admittance to A.S.T.E. Technical Session, Hotel Sta... Pric... souvenirs, etc. Also berth accommodations as follows:

56 Single inside rooms (will sleep only one person)†

Room numbers: 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365.

190 Double inside rooms. These will not be sold as singles. (will sleep 2 or 3 persons—double lower and single upper berths)†

Room numbers: 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 42, 43, 46, 47, 55, 56, 57, 58, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 114, ... 316 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, ... 33 338, 339, 340, 341, 366, 367, 368, 369, 370, 371, 372, 373, 374, ... 37 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, ... 39 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, ... 41 419, 420, 421, 422, 423, 424, 425, 426, 427, 423, 429, 740, 741, ... 74 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, ... 76 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, ... 77 783, and 416.

† These accommodations included in the $10.00 trip.

DELUXE ACCOMMODATIONS, SLIGHT EXTRA COST

Additional accommodations are available at nominal costs in addition to the $10.00 base for the trip.

214 Outside Double Rooms, will sleep 2 or 3, double lower and single upper berths $2.00

Room numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 116, 117, 118, 119, 240, 241, 244, 245, 248, 249, 252, 253, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 274, 275, 276, 277, 278, 279, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 314, 315, 430, 431, 432, 433, 528, 529, 530, 531, 532, 533, 574, 575, 578, 579, 582, 583, 586, 587, 588, 589, 590, 591, 592, 593, 595, 596, 597, 598, 599, 608, 609, 610, 611, 612, 615, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 784, 785, 786, 787, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912,, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, and 941.

126 Outside rooms with toilet, single rooms $4.00

Room numbers: 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 242, 243, 246, 247, 250, 251, 254, 255, 270, 271, 272, 273, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 534, 535, 536, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 576, 577, 580, 581, 584, 585, 604, 605, 606, 607, and 537.

8 rooms with shower and toilet .....

Room numbers: 266, 267, 268, 269, 600, 601, 602, 603.

PARLORS

2 parlors, double beds, special, with toilet .....

The $15 price is for these parlors which will accommodate 2 ... son, including the $10 base price is $17.50. Parlor Numbers ... an...

2 parlors, twin beds, tub and shower bath .....

The $17 price is for these parlors which will accommodate ... pe... person, including the $10 base price is $18.50 Parlor Numbers ... an...

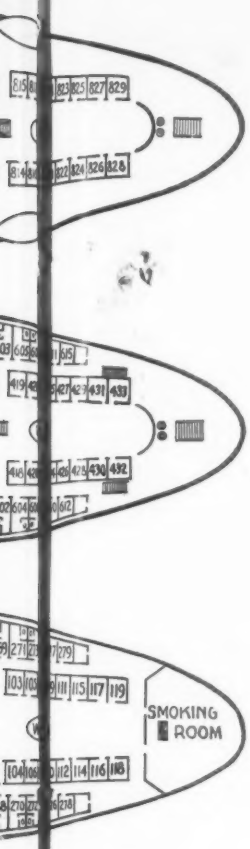
12 parlors, twin beds, tub and shower bath, couch .....

The $20 price is for these parlors which can accommodate 3 ... on couch). For the two persons which this parlor will nor... rate per person will be $20—including the base price of $10. ... C, D, G, H, I, J, K, L, O, P.

8 parlors, twin beds, tub and shower bath, couch and w...

The $25 price is for these parlors which can accommodate 3 ... on couch). For the two persons which this parlor will nor... rate per person is $23.50—including the base price of $10. ... W, X, Y, and Z.

ACCOMMODATIONS WILL BE FILLED IN THE ORDER OF THEIR RECEIPT—USE THIS FORM NO...



el Stat Friday Evening, Sept. 13th,

114, 316, 317, 318, 319,
332, 334, 335, 336, 337,
374, 376, 377, 378, 379,
392, 394, 395, 396, 397,
410, 414, 415, 417, 418,
741, 743, 744, 745, 746,
759, 761, 762, 763, 764,
777, 779, 780, 781, 782

.....$6.00

Cost of parlor regardless of number of persons occupying same

.....$15.00

ate 2 sons. Cost per per-
mbers and N.

.....$17.00

modate persons. Cost per
mbers and F.

.....$20.00

date 3 persons (one sleeping
l norm ly accommodate the
f $10. arlor Numbers A, B,

nd v nda $25.00

date 4 persons (one sleeping
l norm ly accommodate the
0. Par Numbers R, U, V.

NOW

FOR JULY, 1935

ARE YOU GOING?

September 13th is "A.S.T.E. Day" at the Machine Tool Show. All members and their friends in the industry are going. *You're* going. *We're* going. *Everybody's* going. We'll see you at the dock Thursday Evening, September 12th, foot of Wayne Street in Detroit.

THIS IS THE CHANCE OF A LIFETIME—ALL FOR

$10

BASE PRICE

CONSULT DECK PLANS AND SCHEDULE OF PRICES ON OPPOSITE PAGE. ACT NOW. MAKE YOUR RESERVATIONS, NOW. USE THE FORM BELOW.

TEAR OUT THIS FORM AND MAIL TO SECRETARY'S OFFICE

A. M. Sargent, Secty.
American Society of Tool Engineers
31 Melbourne
Detroit, Michigan

IMPORTANT
EVERY Ticket holder must be registered by Name, Company and position. List below, or enclose this information with your application.

Dear Sir:

Please reserve Room Number(s).....or parlor(s) Number.....for

.....persons on the A.S.T.E. Cleveland trip, Greater Detroit, September 12-13,

1935. I enclose.....in the amount of $.....•
(check, M. O., cash)

Signed.....

Company..... **Position**.....

For further information call MA2057

Send tickets to me at.....

City..... **State**.....

MACKINAC ISLAND
ST. IGNACE • CHICAGO

$7.00 Between Detroit and Mackinac Island or St. Ignace. Meals and berth extra.

$18.75 Detroit to Mackinac Island Week-End continuous round trip, meals and berth included. 4¼ hours on the island. Sail every Saturday 1:30 p. m., E. S. T. Home 8 a. m., Monday.

$22.50 **Detroit to Mackinac Island or St. Ignace and return,** meals and berth included; $12.50 one way. Unlimited stopover.

$40.00 **Detroit to Chicago and return,** meals and berth included; $24.50 one way. Stopover at Mackinac Island on both the upbound and downbound trips. Six hours in Chicago on the Tuesday and Thursday sailings; 1½ days on Saturday sailing.

Music, dancing, deck games, bridge, afternoon teas. Social Hostess.

DAILY STEAMER SERVICE

$5.00 One Way To BUFFALO $8.00 Round Trip

Sail 5 p. m., E. S. T., Arrive 8 a. m. following day. Breakfast 25c and 50c. Dinner $1.00 and $1.25 or a la carte. Evening snack 25c. Music and dancing.

$3.00 One Way To CLEVELAND $5.00 Round Trip

Sail 11:30 p. m., E. S. T., nightly, arrive 7 a. m.

Regular Week-End Cruise

TO CLEVELAND $3.00 Round Trip TO BUFFALO $6.00 Round Trip

Good going Friday or Saturday, Return Saturday or Sunday.

Tourist Autos Carried At New Low Rates

Tickets and reservations at City Ticket Office, 140 W. Lafayette; D. & C. Terminal, foot of Third St., Phone Cadillac 9800 or any authorized R. R. or Tourist Agent.

DETROIT & CLEVELAND NAVIGATION CO.

VOCATIONAL ORGANIZATION

(Continued from page 10)

broad objective and then proceeded to build a road leading directly to it. (With a lot of fun and good fellowship on the side.) But, its field is limited, nor does it propose to become an arena for the settlement of controversy. It cannot afford to.

Yet, in common with all recognized engineering societies, it is a pattern on which any society of engineering workers can project itself, with dignity to the individual and credit to the collective body. But, irrespective of objective, any society of engineering workers must be just that—*a society of engineers.* Nothing *less.* Draftsmen, designers and engineers should organize. Each by himself is weak. Organized, he can easily be one of the strongest forces in industry, yes, the *vital* force. But, organization should be a promise *of* big things, not a threat *at* big things. It has been said that labor has a dignity all its own. It should be added that it also has a sense of values. Hence the shopman—the machinist, the tool and die maker — look to the drawing room as a goal, and, by evening and correspondence courses, or by enrollment in recognized engineering colleges, seeks to enhance his position. Therefore, it is a logical corollary that the qualified designer should have a sufficient sense of values to spurn the yoke of unionism which the progressive shop man seeks to escape from. "Shoot for the stars, and retain .... principles which often bring rewards far greater than the petty gains to which they are sometimes sacrificed."

STAG FROLIC IN JUNE WELL ATTENDED

June 13th (not Friday) was the date of the Fourth Annual Spring Frolic—the A.S.T.E. stag affair, that has become a "much looked forward to occasion." This year, several hundred A.S.T.Eers and friends attended.

The evening was soon spent—long before most of those present realized it. Everyone had a good time. There were plenty of activities to participate in and those who cared to listened to the Braddock-Baer fight over the radio, while not otherwise engaged.

Not to be left unmentioned was the excellent lunch and the "refreshments" that were served, also a very good floor show. A high-light of the evening was the announcement of the charter of the steamer *Greater Detroit* and plans for the big A.S.T.E. trip to Cleveland in September. Many of the details of this trip to the Machine Tool Show were given out, along with cards explaining some of the details in regard to this trip.

News of interest to Tool Engineers should be sent to Wm. Hart, Chairman of A.S.T.E. editorial committee. Report anything of interest to your fellow members and workers promptly to Mr. Hart at Colonial Broach Company, Detroit.

SUNDSTRAND MACHINE TOOL CO. ROCKFORD ILLINOIS U.S.A.

ENGINEERED PRODUCTION

EXAMPLES FROM THE SUNDSTRAND FILES

No. 3517

Lathes
Milling Machines
Tool Grinders
Centering Machines
Balancing Tools

Sundstrand Cracks A Tough Nut

Occasionally almost every machine-tool manufacturer encounters a "tough nut" that does not yield to ordinary methods of treatment. Such a piece of work is shown in Fig. 1. These are forgings for the cross piece in an oil well

Fig. 1—Steel forgings for oil well drills. Before Stub Lathe operations, in upper view; afterwards, in lower view.

drill. They come in three sizes, each having the central hole in several different positions. Three diameters on each arm must be turned and shoulders faced, accurately and smoothly. Material is tough steel difficult to cut cleanly by ordinary methods. Both arms of each forging must be machined at one chucking, and roughing and finishing must be completed successively on each arm. Sundstrand engineers cracked this tough nut by using the 15″ Automatic Stub Lathe shown in Fig. 2 with tooling as shown in Fig. 3. Three chucks handle different sized forgings. Machine-spindle has heavy integral flange equal in diameter to outside of chuck. Each chuck has two heavy arms which support a cradle in which the work-piece is mounted by slipping the reamed hole in the forging over a stud. Forging is centralized, so that equal amounts of metal will be removed from both arms, then clamped lightly in position. Operator now tightens a screw in the chuck, which holds work-piece solidly. Cradle is rotated, to bring one arm in position for turning, and locked. Rough turning proceeds on front slide, rough facing on back slide. Both slides then return to starting position, and machine stops. Operator indexes front tool-block to bring finish-turning tools into position. *This automatically actuates a pneumatic cylinder which moves rear tool-block downward and presents two finishing tools to the work.* After one arm is finished, operator indexes front roughing tools back to turning position (this automatically raises rear roughing tool to cutting position),

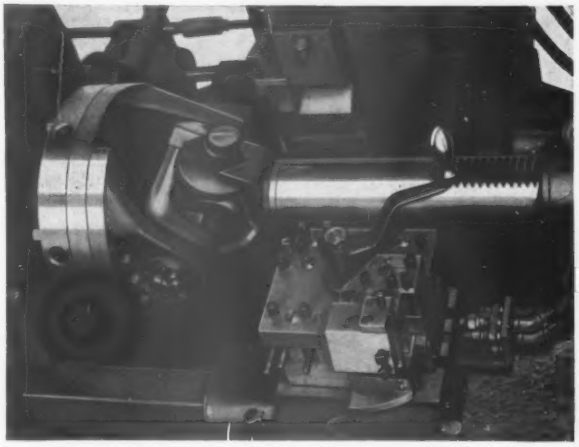


Fig. 3—Close-up showing chuck, tooling, and centralizing device.

operates foot control valve to unlock work-holding cradle, swings it to second position, again operates foot control valve to lock cradle in place. Automatic cycles described above for rough and finish turning are now repeated. Production of machine in commercial service actually exceeds estimates.

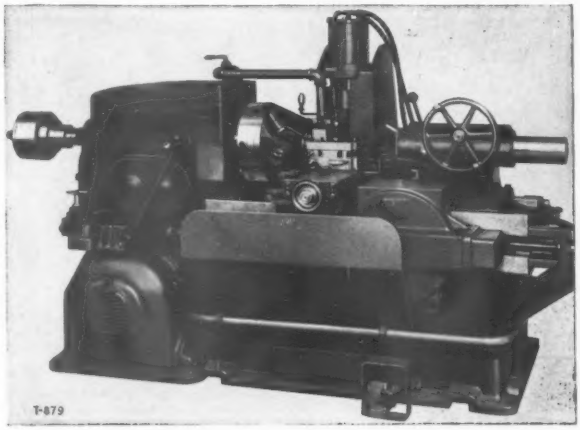


Fig. 2—15″ Automatic Stub Lathe equipped for turning forgings shown in Fig. 1.

Cracking a tough nut is no new enterprise for Sundstrand engineers. If you have a tough turning or milling operation let us have complete data for an Engineered Production estimate.

STERLING - FRENCH MACHINERY CO.

NEW CENTER BUILDING ◆ DETROIT, MICHIGAN ◆ PHONE MADISON 3660

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Air Operated

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Standard Models to Choose From

★Hannifin air operated arbor presses present the widest range of standard and special models—literally a size and capacity suitable for any requirement.

Improved type air cylinder includes the standard Hannifin piston construction with means for outside adjustment of the piston packing ring. Provision is made for correct lubrication throughout.

Hannifin No. AO-1 Arbor Press with semi-steel frame develops 2650 lbs. pressure with an 80 lb. air supply, has a six inch stroke, and 5½ inch depth from center of arbor to face of frame. The position of the cylinder on the frame is adjustable, with maximum capacity of 14 inches from face of table to arbor, and a minimum of 6 inches.

If you have a production problem involving the use of pressure write for Bulletin 36, or consult Hannifin engineers for details of the economies and increased production possible with this type of equipment.

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Pneumatic and Hydraulic Production Tool Equipment

621-631 South Kolmar Avenue, Chicago, Illinois

THIS MONTH'S COVER

Lap Clearance to Twenty Millionths

The photograph on the cover of this edition of *The Tool Engineer* may not appear unusual, for it is plainly apparent that a precision measuring device is being used—an operation commonplace to the production executive or Tool Engineer. The seasoned mass production executive, however, will grant that the parts being gaged and the accuracy to which they must conform—*on a production scale*—is unusual. The actual lap clearance of a Winton Diesel Engine fuel pump plunger is being checked to twenty millionths of an inch or less. (.00002").

The gage being used is an electric type.* The photograph shows it being used to check the roundness and straightness of the cylindrical portion of the plunger. The cylindrical chamber of the pump into which the plunger must fit so closely has been gaged by a cylindrical plug gage. The exceptionally fine "fit" of these two parts is absolutely essential to the performance of the Diesel engine. The pump is required to meter a definite, and a very small, quantity of fuel oil at a pressure as high as 20,000 lbs. per square inch approximately seven hundrd and fifty times per minute—at the rated engine speed.

An inquiry by *The Tool Engineer* to executives of the General Motors Research Division disclosed the high efficiency of this injection pump—itself a testimonial to present-day mass production standards and methods as well as modern precision measurement. It was stated that in more than one hundred thousand miles of operation of the Winton Diesel Engines used in the famous *Zephyr* stream lined train of the Burlington railroad, not one of these parts of the fuel pump has had to be repaired or replaced. When it is remembered that these parts are called upon to function several hundred times in each minute of operation, the millions or billions of times they have functioned satisfactorily loom as astounding. Similar records are being made by other stream lined trains such as Union Pacific's *M 10,001* and the Boston and Maine's *Flying Yankee*.

Not to be un-noticed in the background of this picture is the young apprentice—perhaps a future Tool Engineer or production executive. It seems particularly fitting that he should get his first fundamentals and begin his knowledge of mass production methods with a good grounding in precision measurement and gaging methods.

**Pratt & Whitney's, Electro-Limit Gage, graduated to ten millionths.*

Hard Metal Tipped Tools

WIDIA—CARBOLOY—CUTANIT

For high production operations and where the machine tool equipment is adequate, Tungsten Carbide tipped tools are proving highly economical and are increasing ordinary machine capacities materially.

Our complete modern cutter manufacturing equipment coupled with our long experience in the development and manufacture of Hard Metal tipped tools enables us to furnish the proper grade metal and type tool for every production requirement. Send us the specifications of the material to be machined, make and type of machine tool with available speeds and feeds, and our engineers will recommend the proper tools for your job.

Factory representatives in all industrial centers.

ECLIPSE COUNTERBORE COMPANY

DETROIT 7410-30 ST. AUBIN AVE MICHIGAN

SWARTZ—ENGINEERED and BUILT

PART—CONNECTING ROD

OPERATION—DRILL PISTON PIN HOLE

FEATURES—ONE LEVER MOVEMENT. CLAMPS SIX RODS—EACH ADAPTER BEING COMPENSATING TO ALLOW FOR FORGING VARIATION.

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PRECISION TAPPING

WITH THE

NEW "PROCUNIER"

SENSATIVE HIGH SPEED

FRICTION DRIVE AT SPINDLE SPEED

TAPPING ATTACHMENT

FRICTION REVERSE AT TWICE SPINDLE SPEED

Ball Bearings

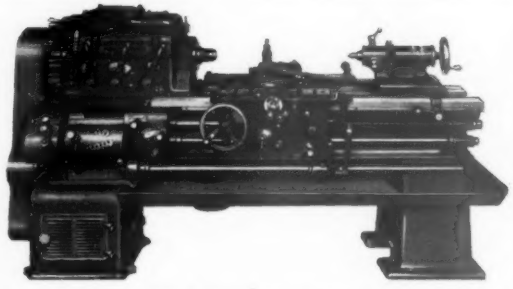
DOUBLE-CONE CORK-FACED FRICTION CLUTCH

SMOOTH SENSITIVE COMPACT

Ask About Our Style "E" Tool.

PROCUNIER SAFETY CHUCK CO.

18 SO. CLINTON ST. - - CHICAGO, ILL.



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Improved Friction Clutch—Forward and Reverse—Running in Oil—Self Adjusting.

16-Speed Headstock—Running in Oil—Simplicity of Construction—Only 10 Gears Required—All Gears Heat-treated or hardened—All Shafts, except Spindle, Mounted on Ball Bearings.

Spindle—Alloy Steel Hardened and Ground, Patented Double Spindle Nose.

Bed—Deep and Wide—Braced by Large Crossribs—Chilled Ways.

Patented Quick Change—Wide Range—Central Oiling System.

Rod and Screw Shift—Positive—Safe.

Carriage—Rugged—Oiling System Providing Oil Film Between Carriage and Bed.

Apron—Double Plate Type—Removable Front Plate—Central Oiling System.

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Q-C ENGINEERING

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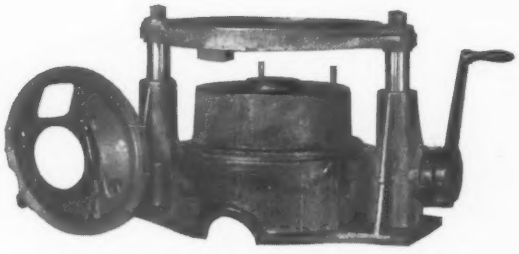

Series 3000 Q.C. Jig tooled for drilling clutch housing.

By it's wide acceptance. Today in over 1000 plants located in 25 States and 9 Foreign countries Q.C. units are daily proving their worth.

May we serve you too. Designing and building Special Machinery, Jigs, fixtures. Standardized Fixture locks, units, live centers, Index tables, locators and rest buttons.

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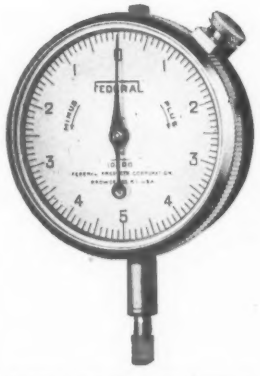

Federal Dial Indicator Model 16. Graduated .0001"; Diameter of Indicator 2 7/32".

Federal Small Hole Gauge (Bench). Graduated .0001". Measures diameter, out of round, taper conditions, etc.

FEDERAL PRECISION MEASURING INSTRUMENTS demonstrate the fact that checking and inspecting can be modernized.

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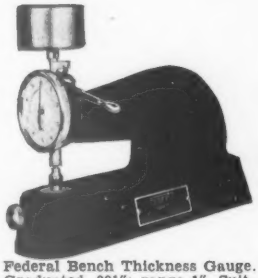

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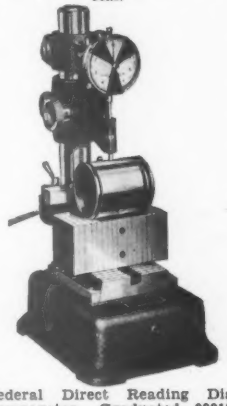

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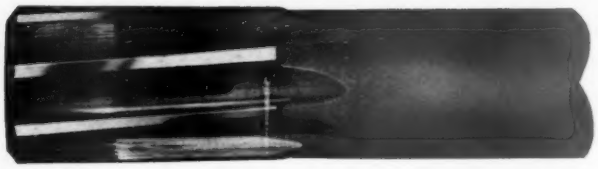

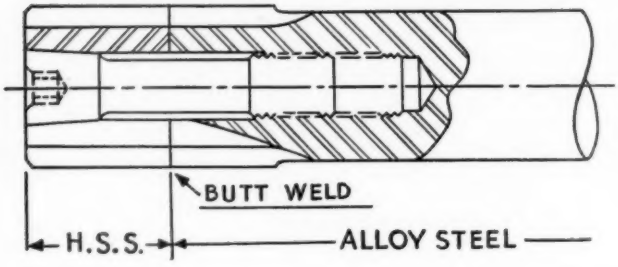

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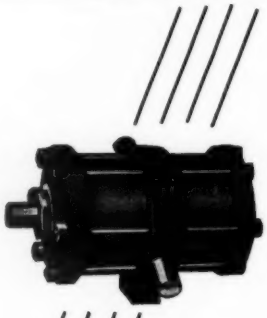

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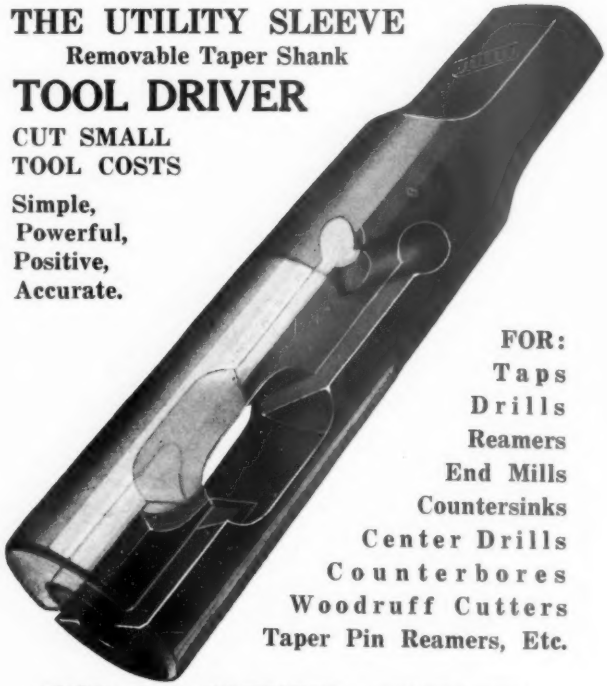

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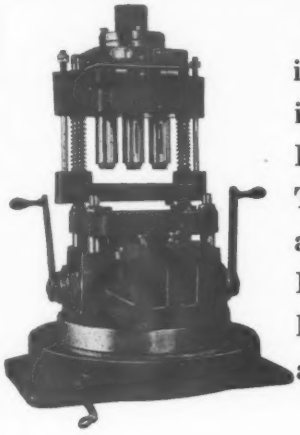

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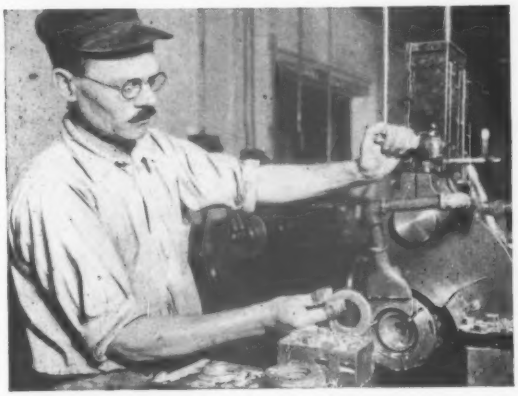

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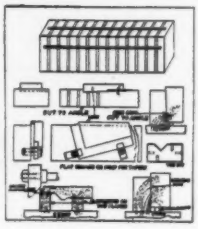

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